ANT/GRA/02

INGER

266 - 301

0009

DG 59 - 105

PCM 1969 (AMERY)

(2)

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Page	Subject
	D. J. GRAINGER BUREAU OF MINERAL RESOURCES CANBERRA A.C.T.
	1969
	PRINCE CHARLES MOUNTAINS SURVEY, MACROBERTSON LAND, AUSTRALIAN ANTARCTIC TERRITORY
1- 5	Fox Ridge - Manning Massif
6- 7	Comy Rocks
8 -32	Larsemann Hills
33	Bolingen Is

All bearings magnetic

SATURDAY FEB 1st 1969

On west side of NE trending valley N. west of △ 5th hill. (Graingers Valley)

(266) At S. end of banded gneiss as observed on the air photos.

Here the major rock type is a pink weathering leucocratic qtz feldspar gneiss rock DG59 M-coarse grained and with mac feld. porphs. Poorly foliated. Flesh coloured feldspars and glassy to pale blue-grey qtz. V minor ferromag minerals. Rock has a granular texture.

At locality 266 felt pattern difficult to pick out. Almost exclusively bouldery outcrops. One small outcrop ? in situ observed of felsic. granular rock as DG59

165/140

Northwards for 150m Rock type mainly variation of DG59 but with thin (mm) ferromag mineral bands 2-3m apart. Felsic gneiss and bands 5m apart

2

Samples DG 60 } lat. 70° 45' S
61 } long 67° 48' E
62 }

Spotted rock as DG 45. (i.e. Fl felsic)

Folding can be observed but v subtle outcrop

(267) Broad band 80 m wide of medium grained hy-pg-qtz-felsic (gneissic) rather granular texture but better foliated than DG 59. Sample DG60
Darker outcrop than DG 59 Contains about 30% dark minerals but probably appear darker than actually is because of ? dark qtz
? outcrop strike $\overset{\text{v steep}}{\underset{150}{\vdash}}$

(268) On N side of ENE trending small felsic fault gully 25 m wide banded gneiss variant of DG 60
Bands a few cms thick of DG 60 and coarse grained hy-pg-qtz-felsic gneiss and other finer grained dark bands of DG 45. Similar to DG 44

$\overset{65}{\underset{140}{\vdash}}$ Joints $\overset{\text{closely jointed } \frac{1}{2}\text{-1m}}{\underset{210}{\nearrow}}$

Outcrop only 2 m wide grades into coarse grained porphyroblastic bi gneiss as DG 58 outcrop 4 m wide then band of DG 60 and variants of darker gneiss speckled as DG 45
Strike as at 268

Who note differences in rock types between N & S limbs of main fold. S limb has narrow outcrops of alternating quartzo-feldspathic gneiss & pyroxene rich. Only very minor garnet gneisses. N. limb has mostly garnet gneiss either as DGG or varieties. Only minor dark bands and qtz-feld gneiss similar to S limb. Outcrops on N limb cannot be traced with any certainty around S limb.

The curved outcrop pattern on the N limb of the fold may be due to a lessening of dip of the steeply dipping limbs of the S limb (but see locality 871 where dip steep). Alternatively, the wider outcrops could be due to the dip being into the hillside.

Main fold seems to be a synform plunging WSW. On the ridge outcrops intricate folding within the dark bands can be seen. To the south of the fault (locality 870) a synform plunges ENE. Most of the northern limb has been sheared out by the fault.

Transverse mafic variations of light + dark grenites as above with rarer 2-5m bands of gt-felds granite rock. Also rock types as DG 45 etc

△ On N limbs of fold outcrop pattern different from south side where many granite bands. On north side outcrop mainly under trees rock type which has a light coloured photopattern is DG 61

(269) ±gt granite gt-feldspar rock. coarse grained and ± pink granite. Boulder outcrops only. Between the granite rock is rubbly float of gt-feld ±gt granite and occasional dark grenites on E end limb

(270) Returning to ridge. Dark band of photo is med-coarse grained bi pg granulite? coarse grained variant of DG 45 (variant of the "pepper salt" rock as DG 60 etc) DG 62 60-70% dark mineral. Little or no foliation. Granular texture

6928/0105

(271) St 045/140 Coarse grained Speckled rock as DG 62 in banded granites. Alternating Of-feldspar ±gt granite and darker bands of DG 62 and DG 60

Appr. dip only - may have been affected by surface creep. Bands about 5-10 cm wide

(272) Traverse south-west along coast wall of
N.E. reading valley for about 2 miles

Oligoclase granulite rock as DG 59 at
200 ft, more foliated by presence of lenticles
of g.f. Boulders underlying g. Clast
pale coloured outcrops

N/p shows boulders outcrops with veinlets of g/f
felsic gneiss and darker bands similar to DG
60 & DG 62

Strike of 290° gneiss as DG 60.

Q. Is the ground the outcrop pattern is not
distinguishable

(273) Boulders and [illegible] Whitebank. Foliated
granulite gneiss (similar to DG 63)
coarse grained and porph porphyroblastic
Feldspar (Tor-like outcrop. Grey coloured rock with pink
Fracture 70/115 Joints 15/115
More dark minerals than the porphy. granite gneiss
at camp site (Similar to DG 38)
Some coarser grained pegmatite too. Foliation
Lat. 70° 47' Long 67° 45'

CORRY ROCKS

5th Feb 1969

North end of Corry Rocks.

The two larger upstanding outcrops are porphyritic biotite granite with prominent N/S and E/W (approx) joints

(275) Locality (2) is similar to (1) but more porphyritic and more closely jointed especially in N/S direction.

(274) Sample DG 64 from locality (1)

(276) Locality (3) a boulder outcrop. Coarse grained biotite gneiss, slightly porphyroblastic closely jointed (no schistosity) (about ½ - 1m apart)
Sample DG 65.

First shattered outcrop but approx. in situ as shown by jointing and some ? banding.

Do not consider it to be moraine because of jointing and ? banding. 4ft high above present level of ice.

last 5°17' long, 71°44'

P.T.O.

LARSEMANN HILLS

FRIDAY 14th FEB

Petrel Ridge

(277) On cliff face a E side of ridge highly migmatised garnet biotite qtz feld rock. Coarse grained granoblastic texture light coloured. Dark minerals about 10%. Strike about 340° with approx vertical dip but strike & dip v difficult to obtain Much contortion and obliteration of primary Contortions emphasised by swirls of biotite and garnet. Garnet in body of rock usually a small dark red grain but in garnet-bi rich swirls it sometimes forms coarser and large porphyroblasts. The rock weathers yellow brown. Close jointing 325° 230° (a few joints dip 05°)

Sample DG66

Within the main granoblastic migmatite are lenses and irregular veins of more pegmatitic material of similar composition Granitic appearance & texture - merges into the main rock - coarse grained but with less biotite and with large garnet aggregates up to 1·5 cms Bi usually in

DG67

∞

small books → 1 cm Occasional aggregates of black px.

Main rock has little structure apart from minor ghost structures of the original gneiss. Massive and only minor foliation.

The coarse grained granitic type rock has minor porphyroblasts of feldspar → 2 cms.

Minor v coarse grained pegmatoidal veins and irregular masses of order of 1 m. diam. Feldspars → 5 cms. long.

DG 66 sample of the coarse grained gt bi qtz feldspar rock

DG 67 sample showing the relationship of the coarse grained granitic textured rock to DG 66.

DG 66 : DG 67 about 60 : 40.

(278) Up cliff towards △ the massive granoblastic rock gives way to a more gneissic rock ↔ coarse bi qtz feld. gneiss med-coarse grained. Rock light coloured but weathers brown. Similar to DG 66 except for increased foliation due to flakes and aggregates of bi + qt

ΔG 69
70
71
} varieties of
Banded wing green

(274)

ΔG69 ?
vs ΔG 73. Olynd?
Note blue grey colour of underwing surface

Rock is contorted but strike approx 300° Veins and irregular lenses of coarser-grained material as in DG 67 — X cutting + impossible for 1cm → 1m.

Irregular swirls of λ of few cms

DG 68 Typical of rock type and shows contortions. More garnet than bi

(279) At Δstn and a summit ridge variations of DG 68 — micro, banded qtz bi qtz feld gneiss — bands 1-2 cms wide Some contorted zones as DG 68

General strike 290 — 70 Joints 315 — 225 and flat lying

Banding consists of alternating qtz feld rock and bi rich layers. Qtz-feld bands often coarser-grained than most of rock and tend to form small ridges on weathering — being more resistant

Minor amounts of fine grained amphibolite qtz feld. rock minor qtz veins (some contorted) forms conformable layers (often very bi rich)

Minor Pg. veins and lenses BrQt → 1m wide.

Large ones are faulted (N-S trend)

(✓ large basic feldspar dikes)

Alkali strike NE from Δ str. Lenses up to 3 m wide and 5-6 m long of v. coarse granitic pegmatite. Brown feldspars → 10 cm long. Lenses clearly not primary contacts.

Largest peg extends for 50 m along strike NE from veins Δ pr. Width varies to up to 2 m. B.Q.F. minor. Large aggregates of pink: of lake red garnet → 2" dia.

x cutting leucosome pods of peg material

Other rock types consist of gt bt qtz fld gneiss with interrupted bands and lenses of qtz / feldspar — a variant of the main rock type. At first glance the leucosome appears to be fld pegmatite but are actually aggregates of minerals. The leucosome and bands are up to 6 cm long and 1–2 cm wide. They are thicker in the apices of small folds and contortions. Appear to pods laterally and across strike into the main banded gneiss. Sharp but conformable.

These two rock types are veined with med-grained "granite" — qtz fld + minor bi & gt. Irregular pods and lens. Granite grades into the country rocks. Similar to the coarse grained variant in DG67

Also the two banded rocks pass into a equigranular granoblastic coarse grained bt — qtz — fld rock. Presumably a fld. rock (Similar to DG66) Thin sect type [Sample DG73]

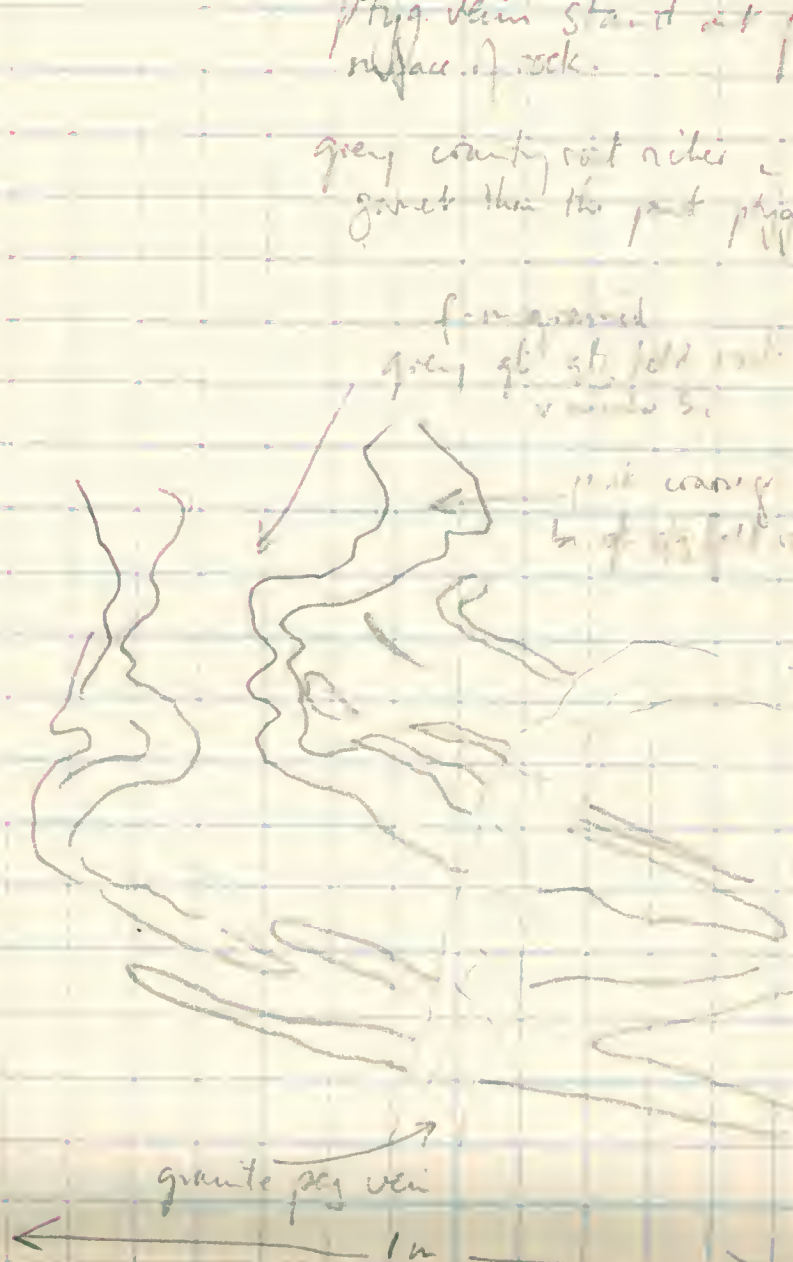
DG72 Streaky gneiss with coarse granite veins

of only minor importance and the banded varieties (pers. Caterall) do it distant any track (see sketch)

Minor streaks and bands up ≤ 5m long and a few cms wide of garnet biotite schist and garnet-rich rock. Garnet aggregates and pods (clots) → 2 cms Conformable

(280) NE along shore from Δ 5th 70m. similar rock types. Thin veins of pink pegmatite contained ~ points Veins about 5-10 cm wide. Coarse grained. Pink feldspars, clear qtz, garnet biotite + yellow green granules mineral ? epidote ~ steep dips SW
In major points 15°. Two such veins ~ points 15 m apart. Also a cross cutting vein pinches + swells → 20 cms Strikes 45° vert
Fragments of country rock with larger veins
Appears to be no alteration effects adjacent vein. Sharp contact. DG-74-75

Veins cross cut pegmatitic facies with country migmatite Ptygs. similar comp to the veins but finer grained

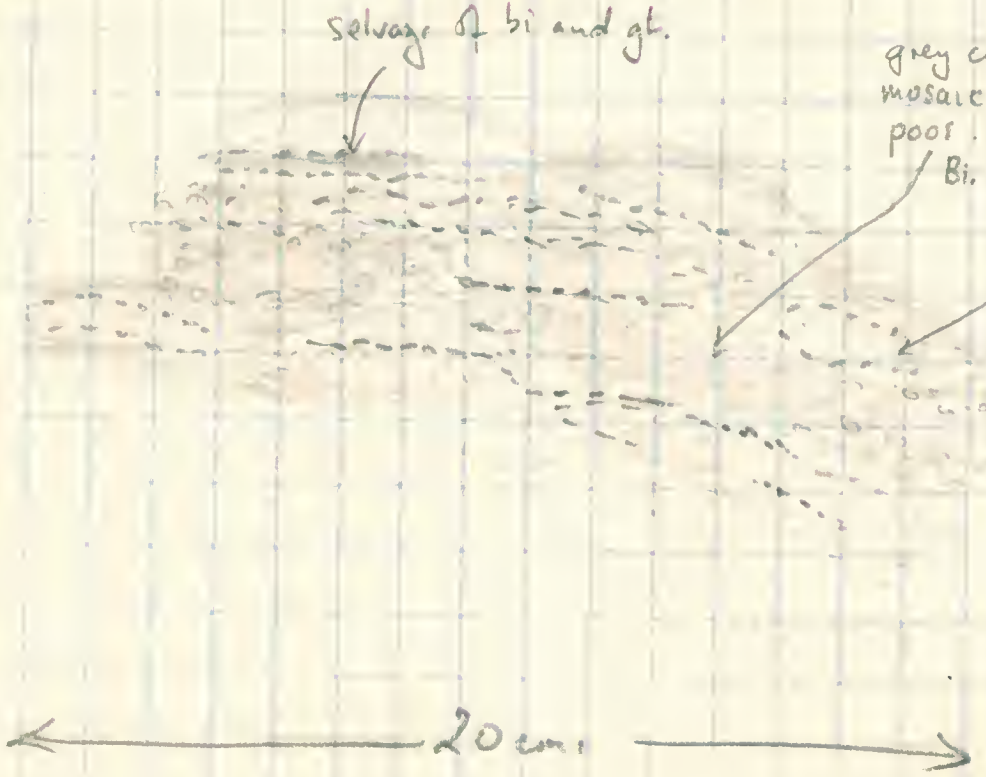

pegmatite pegmatite vein
granite peg vein
1 m

Mt camp.

gt in gt fold nose
v little structure
massive f-n grain
bi gt setting
coarse grained gt-
fold band only minor
gt.
Coarse grained
to pegmatitic
QF rock
35 cms

13

"Streaky gneiss" (augen gneiss)


selvage of bi and gt.
grey coloured mosaic of bi qtz gt., Feld poor. Grains about 1 mm. Bi. v. small flakes
mosaic of aukedral qtz-feldspar grains 1-2 mm diam v minor bi
20 cm.

The Δ rocks consist of migmatites – bi gneiss, qtz feldspar rocks. Banded and streaky migmatitic gneisses grade laterally and across strike into one another and into gneissic 'granite' containing 'ghost gneiss structures' shown by streaks of bi and garnet.

The strike is approx NE but there is considerable local variation and contortion. Contortion especially noticeable in the various banded migmatitic gneisses. Pegmatite folds on a small scale are common. Pegmatitic lenses and irregular veins are common (largest 50 m x 3 m on foreshore). Three pegmatitic granite veins and several stringers cross cut the strike. Veins up to 20 cm thick. Red pegmatite emplaced in joints.

Minor streaks and lenses of bi gneiss schist. Minor iron staining observed and sample of ? Cu. phosphate staining extracted with Fe from zone within migmatites.

(280 A) **Sample ΔG. 76** Blue-green staining on pegmatite rock – band 2 m x 20 cm

? Copper phosphate mineral. It is insoluble in hot dilute HCl

(279) Samples DG 77, 78, 79, 81
sequence of migmatized Cardin to
granite gneiss

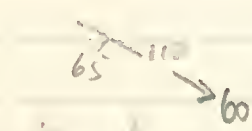
(279) DG 80 - simple shearing boundary gneiss
merging laterally into granitic veins
granite gneiss

SUNDAY 16th FEB

On NW side of ridge cross bedding marg
[illegible] highly contorted and [illegible]
[illegible] material.
[illegible] ridge banded and [illegible]
[illegible]
(251) sample of typical banded [illegible]
DG52 Dk [illegible] bands ~ 1 cm. Pk
felsic poor in mafic bands. Alternating
[illegible] contortions but strike + dip more
regular than [illegible]
Ex. 305/35 Joints 275/10

Rock grey coloured with cream - pale pink
qtz felsic bands. Med grained rock but felsic bands
somewhat coarse grained. Biotite flakes + [illegible]
garnets dark red → 5mm. Rx [illegible]

Across gully and down ridge side [illegible]
banded and minor [illegible]
(252) Banded qtz Bx (injection?) [illegible] DG53
about 40cm wide [illegible] small [illegible]
Tight folding. Both axes strike 110° dip 35°

SE 

Plunge of axes 60° towards NE

Overturned W limbs

Contortion of adjacent banded + streaky gneisses. Irregular peg veining

(283) Dom elliptic banded + streaky gneiss seems more migmatitic similar to next ⊙ pt. Streaks and contortions of gneiss grading into granitic material laterally and across strike.

DG 84 Granitic gneiss porphyroblastic. Qtz bands. Felsic gneiss. DG 82 and streaky gneiss grade into DG 84 which in turn grades into DG 85 granitic gneiss cross-cut granitic garnet gneiss.

(284) In gully at bottom of ridge well banded augen gneiss (streaky gneiss) phenocrysts. Between 283 + 284 Magnetic gneiss + gneiss granite dipping augen gneiss towards 284

Lung Fe stained rocks 325°.

Rock stained brown and yellow. Some veinlets
v. Qz felsitic rich and with layers of garnets
Layers or bands of garnet several cms
apart.
Rocks adjacent to the stained [illegible] a distinct
but [illegible] unaffected.

Ridge (blocky grain) seems to be less developed than banded gneiss where rocks are contorted and swirled. Possibly formed from banded gneiss during metamorphism. Seems to be a stage nearer the granitic granite.

(283) On crest of ridge to W of [illegible] as above. Isolated pods of bi/gt schist + rock and gt bearing granite (as DG 83) in the bands of the darker rocks several metres long on N limbs of folds (tight) on at Coord. 282

General strike NE dip 50° to SE

(282) West across strike migmatites become more leucocratic, and pink

(281) A On crest of ridge Fe stained Porphyritic Fe stained gt bi gneiss or bi metagranite? Sample DG 80. Some blue green staining. V. minor bi in the Fe stained rocks West Fe stained band 6m.

Main road bypass cut. Top of Fe staining on road verge. Leucocratic bi gt gneiss with stretched and rounded gt at coarser grained than the most granitic

of rock & banded Snails and contacting
the banding. Also pods and veins of
peg. mutual mostly coarse gt. (QF gt)
In peg veins grains → 1 cm.) Some bi. peg.

General strike & fracture 330 / 065 360 / 270 Joints

Similar to many of the banded varieties at
△ but differs in having larger grains
enclosed in the gt. bearing veins and streaks
(Good example outcrop here)

Grades W. into massive pink weathering grey
rock - grains bi. and pink feldspar
Comprises mica - coarse almost graphic pink feldspar
In some coarse feldspar rich zones.

Sample. DG 87

This appears to be a zone within the migmatite
Environment. Similar mig. grains are found
W. of edge of zone feldspar rich.

On W. side of valley appears to be
similar massive pink weathering rock as DG
and migmatitic zones. Large scale bands
of Fe stained rock

(279) On △ ridge near campsite erratic of grey sheared rock with eyes of white ? feldspar

Sample DG 88

Returned to △ sh.

P.m. traverse on ridge southeast of △ sh

(285) Ridge SSE of △ ridge

Migmatitic bt biotite gneiss with bands of v fine grained rock up to 1m thick and lenses and stocks of pg bi rock.

Alternation of the migmatitic rock with biotite gneiss (no garnet) (Sample DG 89)

Foliation strike approx 305°. Dip variable generally steeply to E. but some folding.

Poorly foliated medium - coarse grained biotite gneiss. Some coarse grained bi rich pg lenses + pods.

Garnet Bi pg. Veins → 5 cms wide

Strike 235°

Minor Fe stained bands usually bi or bi pyroxene

On coast side of ridge the massive red granite becomes dominant. In part strongly veined and impregnated with granitic material. Diffuse boundaries

Joints 320° × 75°

Yellow brown weathering. Diffuse dark and white patches of bi, felsic veins ? "ghost" foliation structure

∴ perhaps DG89 = end product of impregnation.

Access gives [illegible] valley [illegible] ridge to east.

286 Coarse grained [illegible] DG90

Coarse grained granite and [illegible] Sand bi aligned grain interlocked [illegible] Up slope passes to banded + augen gneiss

286 Up slope the dark band about 25 m wide consists of bi gneiss heavily veined with bright pegmatite, granulite and Fe staining. Within the rocks are highly contorted.

21

Thin dark lines possibly the same
lines that form in dark water at
London 1855

Sample DG 91 of the typical bi gneiss medium grained bi rich felsic gneiss

In some of the garnet-biotite gneiss and pegmatitic material garnet aggregates up to 15-20 cm in diameter

No garnet observed in bi gneiss

287 At S end of ridge open folding axes strike 285° dips SE at about 65° Plunge N plunge 35°.

Bi gneiss and qtz fdt gneiss alternate - bands from a few cms to 1 m thick also some Fe stained limestone

287A N end, ridge irregular alternation of biotite gneiss with dacite tuff(?) and metamorphosed granodiorite by qtz fdt and possibly the irregular alternation due to repeated folding.

Sample DG 92 of the coarse grained granodiorite rock - massive little foliation

A few pods and irregular bands of coarse granite material

Garnet occurs only as isolated grains -

pegmatite + granite material

288 On highest pt of ridge, similar rock to DG92 but garnetiferous + pink
Large open joints 320° Fe stained others 070 and 220

289 On isolated hill to E Tor like outcrop
Pink migmatite coarse banded
garnetiferous + pink similar to DG87
Exposed

(Black lichen on moss from dried rock pool)

290 NW and N Ridge bright green and bright green of several varieties weathering yellow.
Migmatised to varying degrees
Sample DG93 pt on ridge
fresh pink banded yellow colour
due to weathering
Also Fe stained joints
The rocks are folded in open symmetrical
folds plunging N and fold axes strike NE

Seem to have been preferential migration of certain bunging → pink manner migmatite. Most units however are veined and have pods of pegmatite and granite intruded.

MONDAY 17TH FEB 1969

(291) In gully near road pass ¼ mile N from camp between △ ridge and ridge (HW).
Hornfels contact dips 50 NW rocks on 283 28W etc (contamination along strike of these rocks)

Various mineralised yellow weathering pink weathering mafic bands and stocks of gt bi rich rock

DG 94 sample of gt bi rock
Some bands calcite ab, strike for 10' N 10 W - others more steep

DG 95 Sample of pink weathering pink granite mineralised mainly gt bi gt light green. Zone about 2' wide general strike 30° 70 bands truncated by gt bi rich bands on at (282) Joints 203 70

Inland (W) yellow weathering mineralised fracture with bands of fine grained gt bi rock DG 99

(292) [SW] gully striking 310° from strong topographic feature then melt water channel appears 25 - 30 m wide. Melt water stream flowing northwards.

On west side of gully red encrusted as at 291

Up onto ridge pink - yellow weathering encrusted. Some in such bands, and blocks and a band 30 cm thick of fine stained ghyst.

(293) On west side of ridge erratic boulder of [DG 100]

As a general observation the encrusted N. Eastwards from west the bottom of the △ ridge are at sides and in fine weathering yellow-brown in colour especially when dressed for a short time. Then tend to have more fine stained [illegible] than then.

(294) Sample [DG 96] as a typical sample of [illegible]

Within the gt rail magnetites are
lenses of gt in magnetite which have
a grey (fake) outcrop colour.

The bottom part of Andy's
boulder is a large breccia, most of the
yellow brown magnetite with at least
two generations of grey magnetite
(plus the Fe lenses)

(294) Above was a flat pebble conglomerate
boulder of gt rail magnetites and massive pebbles
and boulders of gt-bearing schist quartzite
from [Temple DG 97]. Above the
pebble and cobble conglomerate and irregular
flood stone

Above the stained breccia gt rail zone
which is a pebble cobble boulder
conglomerate (Some Ca + Mn veining locally)
Continuous irregular boulder clay
strike is SW for ~ 1 km until it ends

Westwards magnetites become abundant
grey pink weathering. Maximum to pass
into

(295) Hill 295 is composed of red mg.
(Grey background of qtz in the field - brecciated
Elsewhere red granite mentioned) as
Sample DG 95

Summit of hill variety of magnetites
but yellow weathering garnet rich is
dominant. Irregular veins and pods of
the bright mg green + mg. It is
possible that the qtz red mg. with
and patches of magnetite and
has "absorbed" the latter?
(check later) Yellow-brown
rock has a more homogeneous appearance.
But many ~~the~~ thereafter believe
the red types may be result of
original composition of rock
(i.e. qtz + green and qtz + feldspar

On work of Coll 295 yellow
and red magnetism

Open fields over ~~~ 125° → 60 c. Eyp: Present

Told explained by E gt. changes.

Magn pole 230 → 270
Geom Pole → 230 → 50

[illegible] By [illegible] Fe shows and some
C chg. Interest and will be [illegible]
[illegible] 230 55

HV N end [illegible] Coll and
magnetic E dipole [illegible]

? long scale field

(29) BU 297 seen for 206. long scale
bonded mp applies to by steeple to
E.

(98) Granite vein 1 m wide 300/60
Xcutting gently east dipping veins of granite
Granite veins + granophyre. Mostly
coarse grained but fine med grained at
margins + phenocrysts of quartz
Sometimes red and white green
minerals ? epidote
Pink fold. ally ? Sortite.
Sample DG '98

Sortite veins along part of vein
Boundary Granite/Gneiss not diffuse
but ally ? gneissic

Large scale banding + migmatites
due to original compositional differences
Minor ductile fracture at DG '97
By DG 97

Central area N/S Lawson injected
? but Possibly N-S extensional
? different rock (darker in colour)
No!! many fold axes in the N. to E.

30

From Lorenzen △ Bolinger Is. appear to be sequential in Cayuse's bonded coals until Cayuse red flint beam #4 ? granite

---

Eastern group of Shorewood Hill tributaries related to Cayuse beds by ? granite Cayuse pit vein. Appear sequential

Non isolated outliers in SE of the SE of the group in Cayuse Bolinger road bonded until this chert bands ? meta quartzite until 31 so pyroxene dolerite fingers.

Q Schist, banded mica schist, mineral lineation of 50° towards 110°

and 45° towards 95°

while top of fold is N-NW (bend axis) of this particular Cayuse pit rather than NE

(279) DG 101 Non-magnetic to 5 cms
the band 20 cms wide within the
magnetite at Bata.
Several such bands but also
some in the range

Honeycomb weathering a common feature
of the Lateritic hills

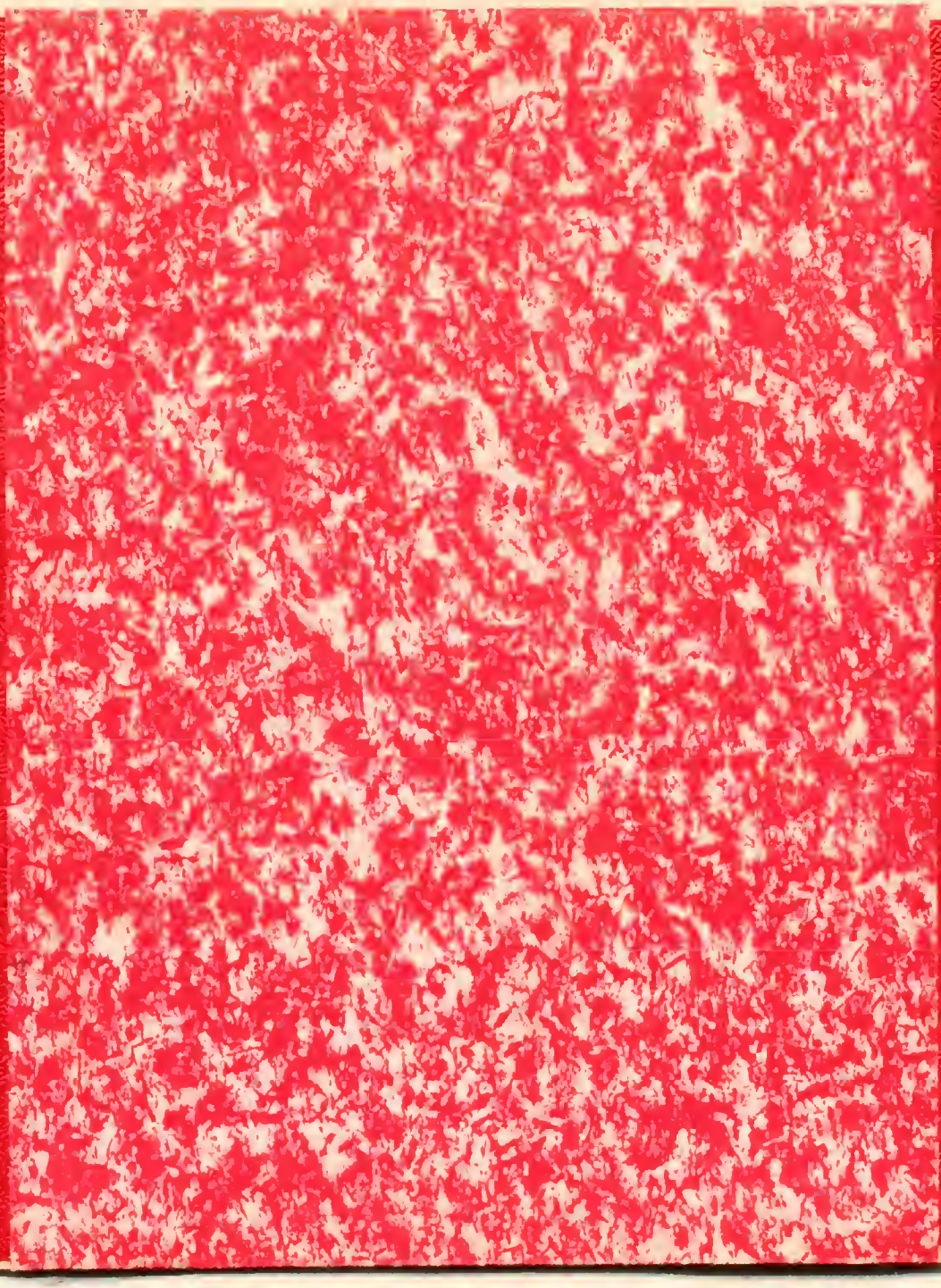
(299) Bolingen Is. sl 90 dip 70 to W

79
90

Bubble of quartz | DG 103 | (strong) lineation dip plunge found W with cpy and / veins of quartz material | DG 104 |. At location DG 104 50 cm thick. Pinches + swells — almost boudinage

Large scale boudin | DG 105 |

v. light coloured [illegible] with [illegible] gt felsic gneiss with numerous bi + gt lenticular pods. Veins and offshoots of coarser material in bi's + matrix thickness

Rock gt bi mil plag + [illegible] [illegible] [illegible]

small [illegible] [illegible] [illegible]